Volume 2, Number 2 May 20, 1990

Fidonet HAM/PACKET Digest - For up to date HAM/PACKET info
Established March, 1989
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T A B L E O F C O N T E N T S

Volume 2, Number 2 May 20, 1990

## E D I T O R I A L S

There are some pretty exciting events about to take place in the Amateur Radio community. SAREX, and Field Day are soon upon us.

This month I am including a list of all the public domain, and shareware ham related files that I have for downloading on the SouthSide BBS here in Indy. You can call the system at 317-882-9330 24 hours a day. Log in as HAM RADIO and use the password of YAGI. This will allow you access to all of the ham files without having to be validated first.

If you don't want to spend the long distance, then I can make these files available for FREE to you via regular mail. The floppy formats that I can handle are 5.25" 360K and 3.5" 720K. Just send however many disks you want filled and enough money to cover return postage, there are now over 8 Megs of ham files online.

Just mail your requests to:

Brian Murrey - KB9BVN
8033 Rexmill Dr.
Indpls., IN 46227

I hope you enjoy this issue!



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## B U L L E T I N S

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DX Bulletin #20, 5/18/90

QST DE W1AW
From ARRL Headquarters

Newington, CT May 18, 1990
To All Radio Amateurs

Thanks to Paul, KB1BE and the Connecticut DX Association for the following DX information.

From the DXCC Desk. Do not submit QSL cards for Walvis Bay before June 1. Cards submitted before that date will be returned with no credit. DXCC credit for Walvis Bay will be given for contacts on or after September 1, 1977.

Special Prefix. DF1SD, DF7TU, DJ0YI and HB9BUN will sign 4U5ITU from May 25 to 29. Primarily active on CW they will also be operating the WPX contest. They will check the WARC bands before and after the contest. Some RTTY operation is expected. QSL to Kuno, DF1SD.

Tortuga Island, Costa Rica. K5MK, TI2WLE and TI2YEM will operate /TI around 2200Z May 18 to 1800Z May 20. SSB only on 14260, 21260 and 28460 KHz. QSL to the callbook address of the operator or via the bureau.

Corsica Island. Wolfgang will be active as TK/DL7HZ from the 20th of May until the 4th of June. Main activity will be 14 and 21 MHz on RTTY/AMTOR and CW and SSB on the WARC bands. QSL to callbook address.

Soviet Union Harvard University Exchange. The Harvard Wireless Club will be traveling on May 22 to Leningrad, USSR. They expect to be on the air from May 24 to June 2 using the call US1A. The hosts for this trip will be the student members of club station UZ1AWT. QSL to W1AF, The Harvard Wireless Club, 6 Linden Street, Cambridge, MA 02138. This is a new QTH as of 1990 for the club. In October 1990, UZ1AWT club members will journey to Cambridge to operate for ten days from W1AF.

South Yemen. A very good possibility for an operation on May 19th with 9K2 operators. They have received verbal permission and written permission is expected soon.

Conway Reef. 3D2AM A group led by N7NG and OH2BH is expected to begin operation May 18 for nine days. They will be active on 160 thru 6 mtrs. Look for them in the WPX CW contest also.

Rotuma. 3D2 Bing, VK2BCH, will make his third visit and amateur operation from Rotuma in the South Pacific starting on May 20th. Bing will operate 80 through 10 meters using mostly SSB with some CW. QSL to his home call.

Cocos Keeling Island. VK9 May 19 to 26 operation of VK9EW by WC5N,

and VK9WB by W5EW.

Dodecanese. SV5 Starting May 21st for 10 days, N2OO, WA3TYF and SV0AA will sign /SV5. They will also be in the WPX CW contest and will be active on 160 through 10 meters on both CW and SSB before and after the contest.

Kerguelen Island. FT4XG, Francois, has been very active on 10 SSB on the weekends. Listen on 28574 KHz around 1500Z working 5 up. Also, FT5XH and FT5XA show up on 14165 KHz several mornings a week at 1100Z or later via long path. QSL for FT4XG via FD1ASS or F1ASW to 1990 callbook address.

Angola. PY4VB is in Lusaka waiting for a license. Watch 14025 KHz at 2200Z daily. QSL to PY4OD.

Seychelles. S79CW has been QRV around 0100Z on 20 CW. QSL to WA5Y. S79FT has been very active this past week on CW. QSL to DL7FT.

Copied from W1AW by Tad, KT7H @ N7HFZ.WA.USA.NA.

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A R T I C L E S

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Sunspot Cycle 22 - What's going on N2IC/0

Many of you may have noticed the sharp drop in the solar flux this month (down to 121), and wondered what's going on with sunspot cycle 22! Are we headed back down already ? Will 10 meters be any good this fall and winter?

By using solar flux data from the SESC (given to me by W1GD),I have examined the current sunspot cycle, and have tried to make some comparisons with the previous 3 sunspot cycles.To examine the sunspot cycles,I have taken a 12 month running average of the solar flux numbers. I call this the "smoothed solar flux". This tends to damp out the day-to-day and month-to-month variations that confuse the issue! Cycle 22 (the current cycle) rose monotonically until June, 1989, peaking at a smoothed solar flux of 214.

The smoothed solar flux stayed at 213 or214 from June 8, 1989, until July 12, 1989. From mid-July, until November, 1989 (the latest date from which a 12 month running average can be constructed), there has been a downward trend in the smoothed solar flux. The flux has been between 205 and 206 from September 12, 1989 until the most recent date (November 6, 1989). This represents a 9 point drop from the peak. Another way to look at the peak interval is to examine the interval of time that the flux was within 9 points of it speak value.

For cycle 22, the smoothed flux was 205 or greater from April 17,

1989 until the "current" date of November 6, 1989 - an interval of slightly less than 7 months. Now, a comparison with previous solar cycles : Cycle 21 rose monotonically until April, 1980 (smoothed flux = 199), then dropped 3 points, then rose to a smoothed flux of 201 in October, 1980.

Cycle 21 then dropped 6 points, before rising to the cycle peak of 204in April, 1981. There was then a 4 point drop, followed by another cycle peak of 204 in September, 1981. Finally, cycle 21 dropped rapidly. Cycle 21 was within 9 points of its peak value for an interval of 25 months.

Cycle 20 was bizarre ! There was no pronounced peak. The smoothed flux maximum was only 156. However, cycle 20 was within 9 points of its peak value for an interval of 40 months. Cycle 19 rose monotonically until June, 1957 (smoothed flux = 233), dropped 2 points, then rose to 243 in December, 1957. Cycle 19 then dropped 2 points, before rising to the cycle peak of 245 in March, 1958. The flux fell rapidly following the cycle peak. Cycle 19 was within 9 points of its peak value for an interval of 9 months. However, cycle 19 had a smoothed solar flux above 200 for 33 consecutive months!

Observations: It seems that the higher the absolute value of the



maximum smoothed solar flux, the more "peaked" is the cycle (a faster rise and decay). If cycle 22 has already passed its peak, it will be remarkable interms of the short length of time it was near its peak value. This tends to imply that perhaps cycle 22 has not yet reached its peak value. On the other hand, cycle 22 has already dropped 9 points from its peak value. None of the other 3 sunspot cycles that I compared against had dips of more than 6 points before rising to the cycle peak. The 9 point drop ofcycle 22 seems to imply that we are past the peak.

Conclusion:The jury is still out on cycle 22. Only time will tell!

Steve, N2IC/0

SAREX Information

SAREX-II is a secondary payload on STS-35, currently scheduled for launch on May 17, 1990. It will be located in the Aft Flight Deck of the Space Shuttle Columbia. Ron Parise, WA4SIR, the Payload Specialist and astronomer on Columbia will be the Astronaut ham operator. SAREX-II-02 is a secondary payload on STS-37, currently scheduled for launchon November 1, 1990. It will be located in the

Aft Flight Deck of the Space Shuttle Atlantis.

Ken Cameron, KB5AWP, the pilot of Atlantis will be the Astronaut ham operator.The American Radio Relay League (ARRL) is the customer on the SAREX-II payloads. NASA gave its authorization for SAREX operations for the following reasons: To encourage our youth to become excited about science and technology, and To familiarize large numbers of the general public with manned space flight NASA's intent in making astronauts available for SAREX operations is to involve the largest possible number of people, particularly youngsters, in Amateur Radio and the US space program. With amateur radio clubs and hams,our astronauts will speak over amateur frequencies directly with large groups of students, showing teachers, parents and communities how Amateur Radio energizes youngsters about science, technology, and learning. You can easily become a part of this activity in your local school, as the astronauts will operate the SAREX equipment in the amateur two meter band. You will be able to send and receive messages via packet for periods of about 12 hours daily.

The astronauts' work schedules will determine your chances for a voice or television message, but Ron and Ken may have an hour or more each day for these modes. The Johnson Space Center's Amateur Radio Club station, W5RRR, in Houston,Texas, will re-transmit astronaut's signals to WA3NAN, at Goddard Space Flight Center, in Greenbelt, MD (near Washington, DC), and to W6VIO, at the Jet Propulsion Laboratory in Pasadena, CA. These stations, plus W1AW and several VHF and UHF repeater groups, will re-transmit the signals on most amateur bands so that you and the students can copy the communications. You will hear NASA Mission Commentary, frequent bulletins to advise listeners of astronaut planned transmissions, and all amateur two-way voice and amateur television transmissions with the shuttles. Using a simple hand-held transceiver, you can open the world of science to hundreds of youngsters. Students themselves can take part in the shuttle flight via a packet connection, and some will even be able to talk directly to the astronauts in orbit.

ARRL and AMSAT are co-sponsoring these exciting missions, with AMSAT headingup technical operations. Hundreds of Amateur Radio operators have already been working behind the scenes for months. The ARRL takes the lead with information and educational support. ARRL Educational Activities Branch(EAB) and NASA HQ will create lesson plans for teachers. All you need to provide is a 2-meter rig or a packet radio setup. If you are a teacher or instructor, contact ARRL EAB to get everything you will need and regular news updates. If you are a parent or a grandparent, contact ARRL EAB and a local school. EAB will send you materials, including ways to convince teachers and school administrators that Amateur Radio is an important discipline

the school should take advantage of on a full-time basis. This a tremendous opportunity for you to showcase SAREX 1990 and amateur radio to kids of all ages in a big way. Plan on being a part of it; contact ARRL EAB now and give your best to our exciting hobby and to our hope for tomorrow: America's youth.

Listen to the ARRL Bulletins on W1AW (see QST for CW and voice bulletins) on adaily basis; and to the AMSAT Nets on Tuesdays (U. S.), 3.840 MHz, 01:30Z to03:00Z, and on Sundays (international), 14.282 MHz, 18:00Z to 21:00Z, +/- QRM.[ANS would like to thank ARRL and NASA for this contribution. Stay tuned nextweek to the ANS bulletins for more details about the STS-35 mission and its amateur radio operations. The WA4SIR flight aboard the STS-35 flight of the Shuttle Columbia is still officially scheduled for early May 16th (GMT), although there are some hints that it might slip by one day. The SAREX mission will carry the packet ROBOT automatic QSO machine which will allow many amateurs around the world to have two-way packet QSO's with the Shuttle during the times when our ham astronaut, Ron Parise is busy.

To work the ROBOT, you transmit on 144.950 MHz and listen to the Shuttle on 145.550 MHz. Subsequent SAREX information bulletins will give you operating hints and describe the schedule in more detail. If you are successful in making a two-way QSO, you call and your unique QSO serial number will be automatically logged and you will receive a QSL card after the mission.

You will know you met all requirements of a two-way QSO by seeing your call in the QSL beacon which will be sent every 2 minutes and looks something like: WA4SIR>QSL <UI>: NI3F/186 WB2TNL/185 W3IUI/179 WB3AFL/177 NF3N/176 WA3EPT/175 N4QQ/174 W3IWI/172 JY1/153 U6MIR/127 If you are heard by the ROBOT, your call will appear in the QRZ beacon which will look something like: WA4SIR>QRZ <UI>: #3405-NE3H NI3F K1LNJ WB2TNL WB3ILO N3ACL N3FWX WA3TSD WA3USG etcetera where the #3405 is a serial number incremented every 2 minutes when the QRZ beacon is sent. Unlike the QSL "worked" list, the QRZ "heard" list is not retained in the ROBOT and the laptop computer on the shuttle. In order to send SWL cards to those who were heard, it will be necessary to have amateurs around the world help to collect the list.

When you are monitoring the WA4SIR SAREX transmissions, try to capture the beacons and send them into us in machine readable format. We are only interested in the QRZ and QSL beacon information; please strip

out everything else (like QSOs monitored, any other beacons, etc.). You may send it through the amateur packet network addressed like this: SP SAREX @ W3IWI.MD.USA or via the Internet addressed like: sarex@tomcat.gsfc.nasa.govand make the Subject: field contain the date/time of the beacons like: May 19 @ 03:42z Here are several hints that may help you make a successful packet QSO with the SAREX ROBOT that will fly with Ron Parise, WA4SIR in mid May.

1. Frequencies: Your transmitter uplink frequency should be 144.950 MHz and you should listen for the shuttle downlink 600 kHz higher on 145.550 MHz. Under no conditions should you transmit on the 145.550



downlink! Since there may be other packet or voice activity in your area on these frequencies, local coordination to insure a clear frequency during the ten day STS-35 mission may be needed.

2. Modulation: The uplinks and downlinks are ordinary AFSK/FM 1200 BPSsignals, just like most terrestrial VHF packets. No special modems areneeded. You are advised to check your transmitter's FM deviation and setit to 3 kHz or less. Most radios are typically set to 5-6 kHz and thiswill be too wide because of doppler shifts. If you don't have a deviation meter, listen on another radio and crank the tone level down until you hear the volume drop noticeably. Most people run too much deviation on their packet signals anyway, and you will probably find this improves the reliability on terrestrial paths too!

3. When to hear/work the shuttle: During the mission Keplerian elements and predictions will be sent frequently by WA3NAN, W5RRR, W6VIO, and many local FM repeaters, as well as by packet bulletins addressed to @AMSAT. Check with your local AMSAT area coordinators for information in your area. In general in the USA, the windows are in the late evening and early morning hours. Don't expect the SAREX hardware to be activated until the second day of the ten-day mission. Because the inclination ofthe shuttle orbit is only 28.5 degrees, the signals can only be heard between about +43 and -43 degrees latitude.

4. LISTEN!!!: Most packeteers don't listen to the BRAAAAP! from their radios, but you should listen during the shuttle activity. If Ron is personally available, he may turn off the SAREX packet hardware and be QRV on voice.

5. Connecting to the shuttle: All you do is to issue a connect. If you are heard, you will see something like this: cmd: CONNECT WA4SIR *** Connected to WA4SIR #191--- Tnx QSO with the SAREX Shuttle "ROBOT"

automatic QSO machine *** DISCONNECTED When the ROBOT hears your "ack" of its transmission, it will disconnect and you will be in the log. Because the ROBOT queues information for 3 seconds and sends several replies in one transmission, you should set your DWAIT to about 4 seconds.

6. Multiple QSO's: Once you have worked the ROBOT and make it into thelog, no further QSO's from you will be logged (even if you use adifferent SSID). Give others a chance and don't connect multiple times!

7. Monitor!!!: Every 2 minutes a beacon addressed to QRZ will list stations heard recently, and the QSL beacon will list those worked. Every 3 minutes the Meta beacon (up to 1.7 kbytes in 7 packet frames)addressed to QST will send text describing shuttle activities. Monitor these beacons to keep informed. In Bulletin #1 we ask for you to submit copies of the QRZ and QSL beacons you copy.

8. Your chances for success: Signals from many hundreds of stations can be heard from the shuttle. With FM transmissions, only the strongest signal "wins", just like in a DX pileup. To help, the ROBOT can have upto 9 QSO's in progress at any one time. Perserverance and a well equipped station will help -- but if activity levels are high



and the uplink channels are busy, it will be a matter of luck.

SpaceNews

MONDAY APRIL 30, 1990

SpaceNews is published and distributed weekly around the world on USENET and Amateur Packet Radio. It is available for unlimited distribution.

* STS-31 NEWS *
==========
Mike (WD8KPZ) of Phoenix, Arizona reported hearing space shuttle astronaut communications on a frequency of 279.000 MHz AM during their EVA during the deployment of the Hubble Space Telescope.

Mike used an Icom R-7000 receiver and a quarter-wave ground plane antenna at an altitude of 15 feet to receive the astronauts.

* STS-35 NEWS *
==========
The STS-35 Astro-1/SAREX mission launch date has been delayed from May 9 to May 15 due to the STS-31 launch delay. There may be a further delay due to a presently unhealthy STS-35 astronaut.

* DOVE-1 NEWS *
==========
Bob (N4HY) continues to upload software to the DOVE-1 satellite in an effort to bring it back "on line" after the OBC crash last month. DOVE-1 is presently transmitting on 2401.100 MHz (+/- Doppler!) while the 145.825 MHz general beacon is turned off. DOVE-1 will be back on VHF in a short while carrying digitized voice messages of world peace.

* COMET AUSTIN NEWS *
==========
Comet Austin (1989c1) has been sighted by many living on the west coast of the United States in recent weeks. Comments from observers indicate that the comet was not as spectacular as expected and there are indications that the comet's brillance will decrease further now that it is receding from the sun.

* CONSORT-3 LAUNCH *
==========
The launch of Consort 3, a commercial suborbital rocket carrying 12 microgravity experiments, has been set for May 17 at 10:40 AM EDT (1440 UTC), by the University of Alabama-Huntsville's (UAH) Consortium for Materials Development in Space (CMDS), a NASA Center for the Commerical Development of Space (CCDS).

Consort 3 will be launched from the Naval Ordnance Missile Test Station facilities at the U.S. Army's White Sands Missile Range (WSMR), New Mexico, by Space Services, Inc., Houston, using its

Starfire rocket. The rocket will carry the payload to an altitude of 200 miles and will provide the experiments with 7 to 8 minutes of microgravity time.

[From: Peter E. Yee @ NASA Ames Research Center, Moffett Field, CA.]

## * MIR NEWS *

After numerous postponments, the 20 ton "Kristall" Mir expansion module is expected to dock with Mir on June 1, 1990. Software problems on board Mir are responsible for the delay. The module was orginally scheduled for launch in February. Cosmonauts Anatoly Solovyov and Alexander Baladin have been living on the Mir space station for 77 days.

## * SPACE FOR PEACE *

The European Space Agency and the Soviet Union have signed a ten-year agreement to cooperate on exploration and use of space for "peaceful purposes". Space Fax Daily reports the agreement was signed on April 23rd in Paris. There will be no exchange of funds under the pact which has the option to be renewed for an additional decade.

[From: NASA Headline News]

## * WELCOME ABOARD! *

Interested in learning more about the Amateur Radio Service? For information on licensing requirements and operating privileges, write:

The American Radio Relay League
225 Main Street
Newington, Connecticut 06111
U.S.A.

# SpaceNews

MONDAY MAY 14, 1990

SpaceNews is published and distributed weekly around the world on USENET and Amateur Packet Radio. It is available for unlimited distribution.

## * STS-35 NEWS *

The launch of STS-35 has been delayed at least until 31-May-90 due to a Shuttle hardware problem.

Here is the expected operating schedule for unattended SAREX operations by Ron Parise (WA4SIR):

Mission Elapsed Time
(D/HH:MM)

| Start | End |
|---|---|
| 0/22:00 | 1/10:20 |
| 1/21:15 | 2/08:35 |
| 2/20:00 | 3/07:55 |
| 3/19:00 | 4/06:40 |
| 4/18:30 | 5/05:45 |
| 5/17:20 | 6/05:50 |
| 6/17:40 | 7/05:35 |
| 7/17:45 | 8/04:45 |

Listed below are the frequencies presently intended to be used by SAREX for both packet and voice. Note, that in no case is "simplex" operation

indicated.  DO NOT CALL WA4SIR ON THE SAME FREQUENCY YOU HEAR HIM!!

| | Shuttle Transmit Freq. | Accompanying Shuttle Receive Freqs. | Offset Designation |
|---|---|---|---|
| Group 1 | 145.55 MHz | 144.95 MHz | Primary |
| | 145.55 MHz | 144.91 MHz | Secondary No. 1 |
| | 145.55 MHz | 144.97 MHz | Secondary No. 2 |
| Group 2 | 145.51 MHz | 144.91 MHz | Primary |
| | 145.51 MHz | 144.93 MHz | Secondary No. 1 |
| | 145.51 MHz | 144.99 MHz | Secondary No. 2 |
| Group 3 | 145.59 MHz | 144.99 MHz | Primary |
| | 145.59 MHz | 144.95 MHz | Secondary No. 1 |
| Group 4 | 145.55 MHz | 144.95 MHz | Primary |
| | 145.55 MHz | 144.70 MHz | Secondary No. 1 |
| | 145.55 MHz | 144.75 MHz | Secondary No. 2 |
| | 145.55 MHz | 144.80 MHz | Secondary No. 3 |



| | | | |
|---|---|---|---|
| | 145.55 MHz | 144.85 MHz | Secondary No. 4 |

The 145.55/144.95 combination is in both Groups 1 and 4 because alternate uplink frequencies from Group 1 would be used over North and South America while those from Group 4 would generally be used in other parts of the world, such as Europe and Africa.

Dissemination of Shuttle information to those participating in SAREX, as well as all interested amateurs will be via a system of key stations, particularly WA3NAN, at Goddard in Greenbelt, MD, W5RRR, at the Johnson Space Center in Houston, and W6VIO at the Jet Propulsion Lab, in Pasadena, California. These stations, and others, will operate on HF and VHF 24 hours a day carrying official NASA supplied voice communication between Mission Control in Houston and the Shuttle crew.  To further provide information specific to SAREX communication opportunities and related information, bulletins originated by amateurs stationed at the Johnson Space Center will be fed via a computer network to these stations and others including W1AW.  The SAREX Metabeacon may also be used for announcements.  It is planned the frequencies listed below will be used for this service.  The selection of frequencies will be made depending on HF propagation conditions during the mission.

| Station | Approx. | Nominal Frequencies in MHz |
|---|---|---|

| | QTH | (+/- QRM) |
|---|---|---|
| WA3NAN | Wash. DC | 3.860, 7.185, 14.295, 21.395, 28.650. 147.45 (FM) |
| W5RRR | Houston | 3.850, 7.227, 14.280, 21.350, 28.495, 146.64 (FM) |
| W6VIO | L.A. | 3.840, 21.280, 224.04 (FM) |
| W6FXN | L.A. | 145.46 (FM) |

All are SSB using the sideband normally used on the band unless otherwise noted.

* FEEDBACK WELCOMED *
==========
Feedback regarding SpaceNews can be directed to the editor (John) via any of the following paths:

UUCP : ...uunet!masscomp!ocpt!tsdiag!ka2qhd!kd2bd
AX.25 : KD2BD @ NN2Z.NJ.USA.NA

MAIL : John A. Magliacane
Department of Electronics Technology
Advanced Technology Center
Brookdale Community College
Newman Springs Road
Lincroft, New Jersey 07738
U.S.A.



FIELD DAY (EASTERN MASS.)

The Framingham Amateur Radio Association will be operating at Bowditch Field, off Union Avenue, in Framingham, Mass., for 24 hours of Field Day beginning 2 p.m. EDT Saturday, June 23. Set-up will begin at 9 a.m.

The Boston Red Cross club is going to be operating all during Field Day at Castle Island, just yards from the beach!

Both clubs invite anyone interested in amateur radio to come on down

-- if you're not licensed, there are still a lot of things to see! The Boston club also stresses that those who are not licensed amateurs can be assigned other, non-operating tasks if they're interested in actually participating.

For those who don't know, Field Day is sponsored by the ARRL to promote and demonstrate amateur radio's emergency preparedness. Stations typically work at temporary setups, with temporary antennas using emergency-type power (generators, solar, and the like).

If you're not in eastern Mass.  and would like to find out more about amateur radio during Field Day, chances are good there's a club somewhere near you that will also be operating during Field Day.  To find a club near you, you can contact the ARRL, 225 Main St., Newington, CT 06111; then you can contact the club and find out if they're doing Field Day and, if so, where.

73 de KA1UUD/AG